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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,235	04/20/2001	Laurence M. Hubby JR.	10007342-1	9228

7590 04/21/2004

HEWLETT-PACKARD COMPANY  
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EXAMINER
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AKKAPEDDI, PRASAD R

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/838,235	<b>Applicant(s)</b> HUBBY, LAURENCE M.	
	<b>Examiner</b> Prasad R Akkapeddi	<b>Art Unit</b> 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 January 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 21-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Response to Arguments***

2. Applicant's arguments filed on 01/02/2004 for claims 1-18 have been fully considered but they are not persuasive: The original rejections dated 08/18/2003 are still valid.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5, 8-14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverstein et al. (Hereinafter referred to as Silverstein1) (U.S. Patent No. 6,339,463) in view of Check III (hereinafter referred to as Check) (U.S. Patent No. 5,463,491).

As to claims 1 and 11: Silverstein1 discloses a visual image display, comprising: a fiber-optic faceplate (50) having an upper face, a lower face; and a multiplicity of straight optical fibers positioned between the upper face and the lower face of the faceplate (Fig. 6a) wherein longitudinal axes of the optical fibers are parallel to each other and substantially perpendicular to the upper face and the lower face of the faceplate; and wherein each of the fibers collects and projects through the faceplate a plurality of light rays emitted by an ambient light source (60). Silverstein 1 also discloses a layer of suspended particle device (SPD) (40) positioned underneath the lower face of the faceplate, wherein the particles are capable of absorbing or reflecting the plurality of light rays (col. 2, lines 31-47) and a pair of electrodes (ITO, a transparent conductive layer, col. 5, lines 7-9) positioned in contact with opposite surfaces of the layer of SPD, wherein orientations of the particles depend on an application of an electric field to the electrodes (col.2, lines 31-47) (Figs. 1-5).

As to claim 2: Silverstein 1 also discloses a transparent conductive layer (ITO, col. 5, lines 7-9).

As to claims 4, 5, 13 and 14: Silverstein also discloses that transparency and the opaqueness of the SPD layer with the electric field in (Col. 2, lines 31-47).

Silverstein does not explicitly disclose that the particles are suspended in droplets of a liquid light valve suspension nor does he disclose perimeter seals at both ends of the SPD layer.

However, Check in disclosing a light valve, discloses a film with particles suspended in droplets of a liquid light valve suspension (col. 2, lines 21-39). Check discloses a film, a fluid (col. 2, lines 25-26 and col. 15, lines 34-52) **(as recited in claims 8,9,16 and 17)** and an index matching fluid (col. 19, lines 65-67) **(as recited in claims 10 and 18)**. Check also discloses perimeter seals (15) **(as recited in claims 3 and 12)**.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the configuration disclosed by Check to the device of Silverstein 1 to provide a film that is stable and provides increased contrast between ON and OFF states (col. 2, lines 17-20) and also to reduce light scatter (col. 2, lines 4-6).

5. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverstein 1 and Check as applied to claims 1 and 11 above, and further in view of Silverstein et al. (hereinafter referred to as Silverstein 2) (U.S. Patent No. 5,442,467).

Though Silverstein 1 and Check disclose a color display device, neither of them explicitly discloses color filters positioned on a rear substrate. Silverstein 2

on the other hand, in disclosing a liquid crystal display device employing fiber optic faceplate elements, discloses color filter (34) on a rear substrate (22), which is positioned underneath the Liquid crystal cell (SPD). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the configuration disclosed by Silverstein 2 to minimize or eliminate off-axis viewing problems with direct view color LCD displays, allowing homogeneous, high quality image representation over a broad viewing-angle range (col. 4, lines 59-63).

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Silverstein 1 and Check as applied to claim 1 above, and further in view of Hubby Jr. (U.S. Patent No. 5,181,130).

Silverstein 1 discloses that the fiber optic faceplate includes an array of individual optical fibers that are fused and cut and polished to a desired thickness to form a plate (col. 3, lines 5-9), Silverstein 1 does not explicitly disclose the cut dimensions of the fiber-optic faceplate. Hubby Jr. on the other hand, in disclosing a fiber optic faceplate liquid crystal display, discloses a fiber-optic faceplate (619) can be fabricated to a thickness in the range of 0.7 to 5.0 millimeters, preferably about 3.0 millimeters (col. 8, lines 28-30).

Note that the range for the thickness of the faceplate as disclosed by Hubby Jr. overlaps the range of approximately 0.25 to 5.0 mm (asserted in claim 7). Therefore, the range in claim 7 would have at least been obvious. See In re Malagari, 499 F.2d 197, 182 USPQ 549 (CCPA 1974).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the Silverstein 1 and Check LCD device with the thickness of the faceplate within the range of approximately 0.25 to 5.0mm such that the faceplate appears more brightly illuminated than a conventional device under a wide range of ambient lighting conditions due to the superior light diffusion characteristics of the fiber faceplate (col. 5, lines 50-55).

7. Claims 21-23 (new) are rejected under 35 U.S.C. 103(a) as being unpatentable over Silverstein 1 in view of Check.

As to claim 21 (new): Silverstein discloses a fiber-optic faceplate (50) and a polymer dispersed liquid crystal (40) that is in optical communication with the fiber optic faceplate (Fig. 6a).

Although in a polymer dispersed liquid crystal material, the liquid crystal particles are in suspension in a polymer base as shown in Figs. 1-5, Silverstein does not explicitly disclose a light valve suspension.

However, Check in disclosing a light valve, discloses a film with particles suspended in droplets of a liquid light valve suspension (col. 2, lines 21-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the configuration disclosed by Check to the device of Silverstein 1 to provide a film that is stable and provides increased contrast between ON and OFF states (col. 2, lines 17-20) and also to reduce light scatter (col. 2, lines 4-6).

As to claim 22 (new): Check discloses the suspension (24) between the first and second electrodes (28) (Fig. 5a).

As to claim 23 (new): Silverstein 1 shows the polymer dispersed liquid crystal material (40) sandwiched between the faceplate (50) and the substrate (30) as shown in Fig. 6a.

Silverstein does not explicitly disclose a light valve sandwiched between the faceplate and the substrate.

However, Check in disclosing a light valve, discloses a film with particles suspended in droplets of a liquid light valve suspension (col. 2, lines 21-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the light valve configuration disclosed by Check to the device of Silverstein 1 to provide a device that is stable and provides increased contrast between ON and OFF states (col. 2, lines 17-20) and also to reduce light scatter (col. 2, lines 4-6).

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 21-23 have been considered but are moot in view of the new ground(s) of rejection.

9. In addition, the Examiner offers the following responses to some specific arguments:

Applicant's argument No. 1 (Page 8, lines 20-21): The Check patent does not teach using a SPD film in combination with a fiber-optic faceplate, nor does it

suggest replacing the liquid crystal cell and polarizers of the '463 patent with a layer of an SPD device.

Examiner's response to argument No. 1: In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant's argument No. 2 (page 9, lines 2-3): The passages cited do not teach or suggest the advantages (criticality) of using an SPD layer in place of LC material and polarizers.

Examiner's response to argument No. 2: The examiner is a little confused by this statement. None of the claims recite the feature 'the advantages or criticality of using an SPD layer in place of LC material and polarizers'. Hence, the applicant's argument is moot due to the lack of specific language in the claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 571-272-2285. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2871

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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